



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/593,184

04/13/2007

Volker Bosch

R.306090

7567

2119 7590 06/02/2008
RONALD E. GREIGG
GREIGG & GREIGG P.L.L.C.
1423 POWHATAN STREET, UNIT ONE
ALEXANDRIA, VA 22314

EXAMINER

LUO, DAVID S

ART UNIT

PAPER NUMBER

2837

MAIL DATE

DELIVERY MODE

06/02/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/593,184	Applicant(s) BOSCH ET AL.	
	Examiner DAVID S. LUO	Art Unit 2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-13, 29 and 30 is/are rejected.
- 7) ☒ Claim(s) 14-28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 April 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>09/18/06 and 04/25/08</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 11, 12, 13, 29, 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2004/0113576 to Heidrich filed December 16, 2002 and published June 17, 2004, and further in view of U.S. Patent Application Publication No. 2004/0056629 to Maeda filed November 9, 2001 and published March 25, 2004.

3. Claims 1-10 were canceled.

4. As to claim 11, Heidrich teaches a method for starting a sensorless, electronically commutable direct current motor (Heidrich fig. 1: 10), having a permanent-magnetically excited rotor (Heidrich fig. 1: 13) and a stator (Heidrich fig. 1: 12) that carries a multi-phase, in particular three-phase stator winding (Heidrich fig. 2: 121, 122, 123), as well as having a switching device (Heidrich fig. 1: 14), controlled by a control device (Heidrich fig. 1: 15), for supplying current in the correct order to the phase windings of the stator from a direct voltage source (Heidrich fig. 2: 121, 122, 123). At rotor standstill and at the onset of the startup operation in the range below a minimum value of the rotor rpm, first the position of the rotor is ascertained by the control device, and then via the switching device, a regulated initial supply of current to the phase windings of the stator is effected, while after the predetermined minimum value of the rotor rpm is attained (Heidrich pg. 1: [0004]). Heidrich does not teach a method for

detecting a rotational position of a rotor using harmonics of input terminal voltages. Maeda teaches a method for detecting a rotational position of a rotor using harmonics of input terminal voltages, comprising the control device receives position signals as rotor position signals for a self-commutation of the motor, which signals are derived directly from the third and/or further odd-numbered harmonics of the phase voltages, and from these position signals furnishes control signals to the switching device for supplying current to the phase windings in normal operation (Maeda pg. 1: [0012]).

5. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to implement the teachings of Maeda into Heidrich since Heidrich suggests a method for starting a brushless DC motor and Maeda suggests the beneficial use of a method which detects a rotational position of a rotor using harmonics of input terminal voltages (Maeda pg. 1: [0012]) in the analogous art of brushless DC synchronous motor control.

6. As to claim 12, Heidrich in view of Maeda teaches a method as claimed in claim 11, wherein rotor standstill, employing the control device to apply current pulses to the phase windings of the stator and, ascertains the resting position of the rotor from the current rise in the individual windings (Heidrich pg. 1: [0004] “The current rise time, i.e., the time that passes until the current flowing in the winding phase reaches a current threshold is measured. The current rise times is read into an energizing table for the stator winding”).

7. As to claim 13, Heidrich in view of Maeda teaches a method as claimed in claim 11, wherein the duration and/or the amount of the initial supply of current to the phase windings of the stator is adapted to the load on the motor at the time (Maeda pg. 1: [0012] “a load having periodic torque variation and inductance distribution of the synchronous motor, which controls

the output currents or output voltages of an inverter based on the rotational position detection result”).

8. As to claim 29, Heidrich in view of Maeda teaches a method as claimed in claim 11, wherein after the standstill position of the rotor is ascertained, at least two phase windings of the stator are supplied with current at a starting value, such that between the axes of the rotor and stator magnetomotive force, an angle of 30.degree. el. to 150.degree. el., and preferably approximately 90.degree. el., results (Heidrich pg. 1: [0005] – [0007]).

9. As to claim 30, Heidrich in view of Maeda teaches a method as claimed in claim 11, wherein after the standstill position of the rotor is ascertained, at least two phase windings of the stator are supplied with current at a starting value, such that between the axes of the rotor and stator magnetomotive force, an angle of 30.degree. el. to 150.degree. el., and preferably approximately 90.degree. el., results (Heidrich pg. 1: [0005] – [0007]).

Allowable Subject Matter

10. Claims 14-28 are objected to as being dependent upon the rejected base claim 11, but would be allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Luo whose telephone number is (571)270-5251. The examiner can normally be reached on M-F 9AM-6PM EST.

Art Unit: 2837

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lincoln Donovan can be reached on (571)272-1988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

David Luo
Art Unit 2837
/Lincoln Donovan/

Supervisory Patent Examiner, Art Unit 2837